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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,778	11/29/2001	Jee-hong Min	1293.1288	1689

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 12/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/995,778

Applicant(s)

MIN ET AL.

Examiner

Audrey Y. Chang

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MW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,5-8,11-14,16,18-23 and 25-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,4,9,10,15,17 and 24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

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DETAILED ACTION

Election/Restrictions

1. Applicant's election of species A (Figure 2A), claims 4, 10, and 17 in Paper No. 7 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election **without traverse** (MPEP § 818.03(a)).
2. Claims 2-3,5-8,11-14, 16, 18-23 and 25-31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected election species there being no allowable generic or linking claim. Election was made **without traverse** in Paper No. 7.
3. Claims 1, 4, 9-10, 15, 17 and 24 remain pending in this application.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
5. **Claims 1, 4, 9-10, 15, 17 and 24 are rejected under 35 U.S.C. 112, first paragraph**, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification and the claims **fail** to teach how could the display device be a *stereoscopic* display device wherein the device *only* comprises a beam splitter and a holographic optical element. The essential elements and conditions concerning the ennoblements of stereoscopic display are not in the claims. The specification and the claims also fail to teach how could the *plurality of images* be projected to *different* spaces by simply having a beam splitter and a holographic optical element. The specification

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specifically teaches that in order to achieve stereoscopic display or to achieve projecting plurality images to different spaces, the device needs the following *essential elements* or *conditions*, (1) *at least two source of images* arranged at *different locations*, and (2) at least *two beam splitters* for combining the plurality of images, and (3) the images including foreground image and background image to introduce stereoscopic illusion, (please see all of the figures in the application). These elements are *critical* or *essential* to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

The specification and the claims also **fail** to teach how could a second beam splitter is capable of projecting the images from the two image sources to *different* space or locations. An ordinary beam splitter such as half mirror will not be able to project image light from two different image sources to different space, unless certain lens function is provided. Clarifications are required.

Claim 9 recites “an image source” and claim 10 recites “the image source displays first a second images” which are **NOT** supported by the disclosure. The specification only teaches to use **different** image sources to display a first and second image but not the same image source. The specification further fails to teach how could the first and second image generated by the same image source is capable of being modulated by the first and second beam splitters **differently** as described in claim 10.

The specification **fails** to give support for the reflective holographic element has a **spherical** lens function as described for claim 17.

Claim Objections

6. **Claim 17 is objected to because of the following informalities:**

(1) The phrase “arranged at relative angles forming an “N”” and the phrase “arranged at an angle forming a “V”” recited in claim 17 are confusing and not completely correct in describing the structural relationships of the elements. For one thing, the angle arrangement between the second image source and

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the second beam splitter is not really a "V". More corrected descriptions such as "being parallel to each other" or "making an acute angle" etc. should be used to described the structural relationship.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1, 4, 9, 10, 15, 17 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Machtig et al (PN. 5,782,547) in view of the Japanese patent issued to Hiroshi (JP 411326822A).**

Machtig et al teaches a *display device* that displays *spatial objects* and **background image** *simultaneously* to create *three dimensional illusion* wherein the display device comprises a *spatial object display* (100, Figure 10), and a *background image display* (120) together serve as the *sources of images* for displaying at a spatial object image (110) and a background image, together serve as the *plurality of images*. The display device further comprises a first *beam splitter* (102) and a second *beam splitter* (106), wherein both beam splitters are partially transmissive and partially reflective mirrors. The first beam splitter (102) partially reflects the spatial object image toward the second beam splitter (106) and is reflected and projected via Fresnel lens to a space (110, Figure 10). The background image is partially transmitted by the second beam splitter and projected via the Fresnel lens to a second space, which appeared to be behind the Fresnel lens (108). The spatial object image and the background image are

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projected to *different* spatial locations such that when viewed simultaneously, the spatial object image appears to be floating in the space in the background image and it appears to be three-dimensional.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly to include a holographic optical element and the holographic optical element has aspherical lens function. Hiroshi in the same field of endeavor teaches an image display device wherein a *reflective holographic optical element* (10, Figure 7, and the abstract) having *aspherical lens function* is used with a beam splitter (7) to converge the image light to the desired location and to introduce *aberrations* correction to the display device. It would then have been obvious to one skilled in the art to apply the teachings of adding a holographic optical element with aspherical lens function to the image display device of Machtig et al for the benefit of adding *convergent* power to the image light so that the image display device could have a more compact design and for the benefit of adding aberrations correction to the image display device to improve the image quality. With regard to the specific arrangement of the beam splitter and the holographic optical element, Hiroshi teaches that the image light from the source (LCD) is first reflected by the beam splitter and directed to the holographic optical element, the reflected light from the holographic optical element is then transmitted by the beam splitter to the observation location. It would have been obvious to one skilled in the art to modify the elements of the display device of Machtig et al to incorporate this structural arrangement for the benefit of providing a more compact design for the display device.

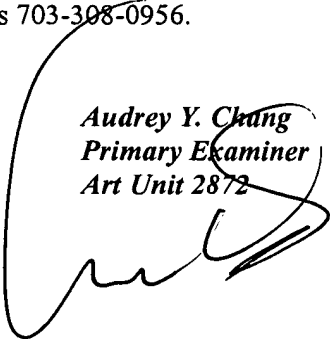
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
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A. Chang, Ph.D.